

CLAIMS

We claim:

1. A process for cleaning a material comprising the step of:
contacting a material with an extracting fluid under conditions of temperature and pressure
sufficient to maintain the fluid at, near or above its critical point to produce a clean material.
2. The process of claim 1, wherein the extracting fluid is selected from the group consisting of
comprising Xe, NH₃, lower aromatics, nitrous oxide, water, CO, CO₂, H₂O, lower alcohols, lower
alkanes, lower alkenes and mixtures or combinations thereof.
3. The process of claim 1, wherein the extracting fluid comprises a major portion of CO₂ and
a minor portion of a secondary fluid selected from the groups consisting of Xe, NH₃, lower
aromatics, nitrous oxide, water, CO, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures
or combinations thereof.
4. The process of claim 1, wherein the extracting fluid is CO₂
5. The process of claim 1, wherein the material is a drill fluid and the clean material comprises
a hydrocarbon product substantially free of contaminants, a solids product substantially free of
hydrocarbons and other contaminants, and an aqueous product.
6. The process of claim 1, wherein the material is a used oil and the clean material comprises
a cleaned oil substantially free of water and water soluble contaminants.
7. The process of claim 6, wherein the cleaned oil has a lower sulfur content than the used oil.
8. The process of claim 1, wherein the material is a hydrocarbon fuel and the clean material
comprises a cleaned fuel having a lower sulfur content than the hydrocarbon fuel prior to cleaning.
9. The process of claim 1, wherein the material is a hydrocarbon contaminated soil and the
clean material comprises a hydrocarbon product substantially free of solids, water and water soluble

contaminants, a cleaned soil substantially free of hydrocarbon and other contaminants, and an aqueous product substantially free of hydrocarbon.

10. A process for treating drilling fluids comprising the step of:

contacting a drill fluid with an extracting fluid under conditions of temperature and pressure sufficient to maintain the solvent at, near or above its critical point to produce a hydrocarbon product substantially free of contaminants, a solids product substantially free of hydrocarbons and other contaminants, and an aqueous product.

11. The process of claim 10, wherein the extracting fluid is selected from the group consisting of comprising Xe, NH₃, lower aromatics, nitrous oxide, water, CO, CO₂, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

12. The process of claim 10, wherein the extracting fluid comprises a major portion of CO₂ and a minor portion of a secondary fluid selected from the groups consisting of Xe, NH₃, lower aromatics, nitrous oxide, water, CO, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

13. The process of claim 10, wherein the extracting fluid is CO₂

14. A cleaned drilling fluid solid comprising a solid material obtained from a process of any of the claim 10.

15. A hydrocarbon composition comprising a hydrocarbon material and drilling additives obtained from a process of any of the claim 10.

16. An aqueous composition comprising an aqueous material obtained from a process of any of the claim 10.

17. A process for treating used oil comprising the step of:

contacting a used oil with an extracting fluid under conditions of temperature and pressure sufficient to maintain the solvent at, near or above its critical point to produce a cleaned oil

substantially free of water and water soluble contaminants.

18. The process of claim 17, wherein the extracting fluid is selected from the group consisting of comprising Xe, NH₃, lower aromatics, nitrous oxide, water, CO, CO₂, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

19. The process of claim 17, wherein the extracting fluid comprises a major portion of CO₂ and a minor portion of a secondary fluid selected from the groups consisting of Xe, NH₃, lower aromatics, nitrous oxide, water, CO, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

20. The process of claim 17, wherein the extracting fluid is CO₂

21. A process for treating hydrocarbon fuels drilling fluids comprising the step of:
contacting a hydrocarbon fuel with an extracting fluid under conditions of temperature and pressure sufficient to maintain the solvent at, near or above its critical point to produce a cleaned fuel having a lower sulfur content than the hydrocarbon fuel prior to cleaning.

22. The process of claim 21, wherein the extracting fluid is selected from the group consisting of comprising Xe, NH₃, lower aromatics, nitrous oxide, water, CO, CO₂, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

23. The process of claim 21, wherein the extracting fluid comprises a major portion of CO₂ and a minor portion of a secondary fluid selected from the groups consisting of Xe, NH₃, lower aromatics, nitrous oxide, water, CO, H₂O, lower alcohols, lower alkanes, lower alkenes and mixtures or combinations thereof.

24. The process of claim 21, wherein the extracting fluid is CO₂